bridge, Calif., on February 28, within a few inches of that established in the flood of December 1937. Considerable damage resulted.

Flooding of bottom lands occurred in some of the tributaries of the Williamette River in Oregon from February 6 to 29 but no material damage resulted.

FLOOD-STAGE REPORT FOR THE MONTH OF FEBRUARY 1940

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
ATLANTIC SLOPE DRAINAGE					
James:	*Feet*			*Feet*	
Columbia, Va.	10	12	14	11.4	13
		18	23	14.4	19
State Farm, Va.	12	11	11	13.0	12
Roanoke:					
Weldon, N. C.	31	21	22	32.1	21
Williamston, N. C.	10	12	(1)	11.0	17, 18, 28
Neuse:					
Neuse, N. C.	14	8	10	14.9	9
Smithfield, N. C.	13	8	11	14.0	10–11
Cape Fear: Lock 2, Elizabethtown, N. C.	20	8	13	26.0	9
		20	22	20.9	21
Saluda: Pelzer, S. C.	6	18	20	6.8	19
Santee:					
Rimini, S. C.	12	21	25	13.4	22–23
Ferguson, S. C.	12	23	26	12.5	25
Ogeechee: Dover, Ga.	7	20	23	7.1	21–23
Savannah:					
Butler Creek, Ga.	21	19	21	23.2	20
Clyo, Ga.	11	17	(1)	15.9	28
Ocmulgee: Abbeville, Ga.	11	21	28	11.8	26
Oconee: Milledgeville, Ga.	20	19	20	20.8	20
Altamaha: Charlotte, Ga.	12	18	(1)	15.1	29
EAST GULF OF MEXICO DRAINAGE					
Flint: Albany, Ga.	20	21	21	20.1	21
Apalachicola: Blountstown, Fla.	15	17	Mar. 3	20.9	22
Choctawhatchee:					
Newton, Ala.	19	19	19	19.8	19
Caryville, Fla.	12	19	24	12.9	22
Cahaba: Centerville, Ala.	23	6	7	27.0	6
		18	19	25.3	19
Black Warrior:					
		6	8	55.5	6
Lock No. 10, Tuscaloosa, Ala.	46	10	11	48.0	10
		19	20	48.2	19
Lock No. 7, Eutaw, Ala.	35	7	18	45.9	13
		19	25	41.8	22
Tombigbee:					
Lock No. 4, Demopolis, Ala.	39	7	28	50.9	14
Lock No. 3, Whitfield, Ala.	33	6	(1)	52.9	14–15
Lock No. 2, Pennington, Ala.	46	8	(1)	54.0	18–19
Lock No. 1, Alabama	31	9	(1)	36.7	19–21

FLOOD-STAGE REPORT FOR THE MONTH OF FEBRUARY 1940—Continued

River and station	Flood stage	Above flood stages—dates		Crest	
		From—	To—	Stage	Date
EAST GULF OF MEXICO DRAINAGE—continued					
	Feet			*Feet*	
Chickasawhay: Shubuta, Miss.	26	10	11	26.6	11
Pascagoula: Merrill, Miss.	22	12	16	22.4	14, 15
Pearl:					
Jackson, Miss.	18	9	29	23.3	19
Pearl River, La.	12	10	(1)	15.0	13
MISSISSIPPI SYSTEM					
Ohio Basin					
Allegheny: Parkers Landing, Pa.	20	13	15	24.4	12
Lower Mississippi Basin					
Coldwater: Coldwater, Miss.	13	10	12	13.4	11
		18	21	13.5	20
PACIFIC SLOPE DRAINAGE					
San Joaquin Basin					
Kings: Piedra, Calif.	10	26	26	10.5	26
Mokelumne: Bensons Ferry, Calif.	12	28	(1)	------	------
Sacramento Basin					
Stony Creek: St. John, Calif.	12	28	28	13.9	28
North Fork: Colgate, Calif.	14	27	28	14.8	27–28
Feather:					
Oroville, Calif.	25	27	28	25.1	28
Nicolaus, Calif.	25	28	(1)	26.3	29
Sacramento:					
Kennett, Calif.	25	27	29	36.3	28
Red Bluff, Calif.	23	27	(1)	32.2	28
Hamilton City, Calif.	22	28	29	22.6	29
Knights Landing, Calif.	30	28	(1)	33.5	29
Humboldt Bay Basin					
Eel: Fernbridge, Calif.	17.5	27	(1)	24.4	28
Columbia Basin					
Long Tom: Monroe, Oreg.	12	6	10	13.0	8
		19	19	12.0	19
		27	(1)	13.1	29
Santiam: Jefferson, Oreg.	10	6	7	11.5	7
		26	26	10.0	26
		29	29	10.4	29
South Yamhill: Willamina, Oreg.	8	5	7	10.7	6

[1] Continued at end of month.

WEATHER ON THE ATLANTIC AND PACIFIC OCEANS

[The Marine Division, I. R. TANNEHILL in charge]

NORTH ATLANTIC OCEAN, FEBRUARY 1940

By J. H. GALLENNE

Atmospheric pressure.—Mean monthly pressures for February 1940 show negative departures from normal over practically all ocean areas from which reports were received, with the exception of Reykjavik, Iceland, where a positive departure of 9.9 millibars (0.29 inch) was noted. Average pressure values were highest over and adjacent to the Gulf of Mexico, diminishing off to the north-northeast, where the lowest value, 996.5 millibars (29.42 inches), was observed at Julianehaab, Greenland.

The pressure extremes noted from vessel reports were 1,033.2 millibars (30.51 inches) and 958 millibars (28.29 inches). The highest was observed on the American steamship *Excambion*, during the forenoon of the 17th, near latitude 36° N. and longitude 12° W., while the lowest, 958 millibars (28.29 inches), was reported from the steamship *Tulsa*, on the evening of February 1, in connection with an area of low pressure near 42° N. and 41° W.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure (sea level) at selected stations for the North Atlantic Ocean and its shores, February 1940*

Station	Average pressure	Departure	Highest	Date	Lowest	Date
	Millibars	*Millibars*	*Millibars*		*Millibars*	
Julianehaab, Greenland [1]	996.5	−3.5	1,020	16	955	6
Reykjavik, Iceland [2]	1,010.3	+9.9	1,032	12, 13	988	6
Lisbon, Portugal	1,017.6	−1.7	1,030	18	1,008	4
Horta, Azores	1,009.3	−11.7	1,027	27	991	7
Belle Isle, Newfoundland [3]	999.9	−6.2	1,022	24	970	12
Halifax, Nova Scotia	1,007.6	−5.3	1,025	19	969	11
Nantucket	1,011.5	−5.8	1,029	18	970	14
Hatteras	1,014.9	−4.7	1,031	23	988	14
Turks Island	1,016.3	−2.3	1,020	23	1,011	20
Key West	1,017.3	−1.0	1,028	23	1,008	17
New Orleans	1,016.9	−2.1	1,033	22	997	17

[1] For 21 days. [2] For 20 days. [3] For 24 days.

NOTE.—All data based on a. m. observations only, with departures compiled from best available normals related to time of observation, except Hatteras, Key West, Nantucket, and New Orleans which are 24-hour corrected means.

Cyclones and gales.—February 1940 was a stormy month on the North Atlantic Ocean. Gales and heavy weather were reported over some portion of the ocean on every day during the month, with winds of storm and hurricane force on 8 days.

The most severe conditions to affect our coastal sea area were those of February 3 and February 14–15. Charts XIV, XV, and XVI show the situations on the aforementioned dates.

During the evening of February 2, cylconic conditions developed to the east of Cape Hatteras, and on the morning of the 3d the center was near latitude 37° N. and longitude 62° W. The observer on the American steamship *Exmouth* passing near the center of the LOW on February 3, reported in the daily journal that winds of whole gale to hurricane force and high rough seas were experienced throughout the day. A press report from the Baltimore Evening Sun, stated that the steamship *Nishmaha*, on February 3, when about 600 miles east of Bermuda, encountered southwest wind of 60 miles an hour and that during the storm which lasted 3 days, 5 plates in the No. 1 hold cracked, causing the ship to leak so badly she was forced to heave to and turn on her sea pumps. A call for aid was sent out and the American Export Lines freighter *Extavia* stood by for 4 days. Finally the *Nishmaha* reached the port of Bermuda, where necessary repairs were made.

Several other vessels near this storm area reported winds of force 9–11 (Beaufort scale), with rough to high seas. The storm moved in a north-northeasterly direction for the next 48 hours, and from available reports, it appears to have merged with another depression in the vicinity of Greenland on the morning of February 5. Reports indicate that from February 6 to 12, practically all cyclonic activity lay over the north-central and north-western portions of the Atlantic, and that many vessels encountered winds of force 8 to 11 during that period.

The Danish steamship *Tennessee*, near latitude 53° N. and longitude 34° W. met westerly winds of hurricane force on the morning of February 10. On the morning of February 11 the entire seaboard from Maine to Florida experienced unsettled weather with high winds in the lower portion of the coastal area, and high winds to gales in the upper portion. The American steamship *Extavia*, at latitude 34.4° N. and longitude 63.7° W., reported a barometer reading of 1,004 millibars (29.65 inches); west wind of force 11; precipitous seas, heavy swell and violent rain squalls. This disturbance moved rapidly toward the north-northeast and was centered near Belle Isle, Newfoundland, on the morning of February 12.

A scarcity of ship reports from the northern and northeastern portions of the Atlantic makes it extremely difficult to chart the movement of cyclones and anticyclones in those regions.

On the evening of February 12 a shallow cyclonic system appeared over the eastern portion of Texas. It moved rather slowly northeastward for the next 36 hours, and at 7:30 a. m. (E. S. T.) of the 14th, the center of the depression lay between Norfolk, Va., and Washington, D. C. This disturbance increased in intensity and scope as it continued its progressive movement toward the northeast. At 7:30 p. m. (E. S. T.) of February 15, the steamship *President Harrison*, then a short distance to the west of the center of the LOW, reported a barometer reading of 975 millibars (28.79 inches). From reports at hand, indications are that during the next 2 or 3 days, this disturbance caused gales over a wide ocean area in higher latitudes. In connection with this cyclone, reports of hurricane-force winds were received from the steamship *Labette*, and the United States Coast Guard cutter *Chelan* during the evening of February 14 and morning of February 15. During the remainder of the month, less vigorous cyclones were reported from ships at sea over scattered portions of the North Atlantic.

It is impossible, due to lack of space, to include all gale reports received from vessels in the North Atlantic during February. The Ocean Gales and Storms table, found elsewhere in this REVIEW, includes all occurrences of winds in excess of force 9.

Fog.—There was less fog reported during February 1940, over the Gulf of Mexico and near the southeastern United States coast, than in the preceding month.

Fog continued plentiful from Cape Hatteras to the fortieth parallel, but the New England coast and the Maritime Provinces had less fog than usual for the month of February.

Contrary to what might be expected at this season of the year, remarkably little fog was reported near the Grand Banks during the month.

Fog is seldom noted over Caribbean waters; however, two instances were reported this month. Fog was observed on February 7 off False Cape, northeastern Honduras, near latitude 15.5° N. and longitude 83° W. On the following day a vessel reported fog off the coast of Nicaragua, at approximately 100 miles to the southward of the position aforementioned.